UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

MAR 23 2018

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Andrew H. Hartten
Chemours Project Director
Chambers Works, NJ
The Chemours Company
1007 Market Street
P.O. Box 2047
Wilmington, Delaware 19899

Re: Comprehensive RCRA Facility Investigation (RFI)
Chemours Chambers Works, Route 130, Deepwater, New Jersey
NJDEP SRP PI# 008221
EPA I.D. No.: NJD002385730

Dear Mr. Hartten:

The U.S. Environmental Protection Agency (EPA) Region 2 has completed its review of the RFI for the Chambers Works facility, which consists of the following documents:

- Comprehensive RCRA Facility Investigation Report (October 2014);
- Appendix A: Fact Sheets for Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) (September 2014);
- 2014 Comprehensive RFI Supplemental Information Soil Data Post Maps (September 2015); and
- 2014 Comprehensive RFI Supplemental Information SWMU Documentation (April 2016)

Set forth below are EPA's comments on the RFI. We also enclose the New Jersey Department of Environmental Protection's (NJDEP's) comments on the RFI, which are dated January 30, 2017.

As noted in NJDEP's comments, several components of the investigation and remediation are moving forward on different paths; however, information pertaining to all investigative work and remedial actions related to the facility should be included in the RFI. As such, some of the comments include issues pertaining to PFOS, the Delaware River and the Salem Canal.

Comments:

Residual Source Areas: There appear to be areas throughout the facility where soil concentrations exceed the New Jersey Impact to Groundwater Soil Screening Levels (IGWSSL). For soil data in SWMU areas that were not compared to the IGWSSL, please provide an updated table comparing the historical soil concentrations to the IGWSSL.

Since these areas may represent a continuing source of contamination to the groundwater, EPA expects that these areas will be evaluated for active remediation (*i.e.*, remediation beyond groundwater capture/containment), either as additional interim measures to be implemented in the near term or as part of the Corrective Measures Study (CMS).

Delineation of Facility Soils for PFAS: Since PFAS was identified in the Salem Canal sediment and in offsite wells as a facility-related contaminant, a facility-wide characterization of PFAS in soil is necessary to identify specific areas which may be sources of groundwater contamination. Please prepare and submit a work plan, within thirty (30) calendar days of receipt of this letter, for performing this characterization effort.

SWMU 33 (Manhattan Project Area): This area was used by the Manhattan Engineering District and the Atomic Energy Commission to process uranium oxides and uranium bearing scrap. Please provide an explanation of the cleanup activities that have been implemented specific to this SWMU, including an explanation of the potential impacts that the area-specific contamination (*i.e.*, radionuclides) may have on the facility-wide cleanup *(i.e.*, the area specific groundwater sampling program, and whether radionuclides are present in the wastewater treatment plant influent and effluent).

Offsite Groundwater Delineation of PFAS: Based on the current groundwater concentrations of PFAS, the nature and extent of the facility-related PFAS contaminant plume does not appear to be fully delineated either horizontally or vertically off-site. As discussed during our February 14, 2018 meeting, we understand that Chemours will sample existing the offsite monitoring wells for PFAS. EPA and DEP continue to maintain the need for additional offsite wells.

During the meeting, we also discussed the need for the development of Standard Operating Procedures (SOPs) for the off-site private well sampling program. It is our understanding that Chemours agreed to develop the SOPs and we are requesting that they be provided within thirty (30) calendar days of receipt of this letter.

DNAPL Treatment: In addition to the DNAPL collection and containment efforts that are being implemented, Chemours should continue to evaluate options for aggressively reducing DNAPL mass and distribution across the facility through active treatment as an additional interim measure(s). Therefore, please provide EPA with a work plan for evaluating DNAPL treatment options within 30 calendar days of receipt of this letter.

The Delaware River: Please provide a screening-level ecological risk assessment (SLERA) for the Delaware River that is based on current sample results. The findings of the ecological risk assessment may affect the remedial approach for addressing impacted sediments in the Delaware River.

EPA expects that, as part of the CMS, Chemours will evaluate options for remediation of DNAPL-impacted river sediment, including measures to either physically remove and/or actively treat, in-situ, contaminated sediment.

Salem Canal: Please provide detailed information regarding the ongoing supplemental groundwater investigation that is scheduled to be completed in May 2019. Based on our February 14, 2018 meeting, it is our understanding that Chemours will install a monitoring well near the gap in the canal wall to better evaluate any possible groundwater to surface water impacts to the canal.

Similar to our recommendation on a remedial approach for the Delaware River sediments, remediation of the Salem Canal sediments may be necessary based on the completion of the SLERA. The continuing evaluation and investigation of the Salem Canal should be incorporated into the RFI.

Remediation of the Ditches: The RFI should address the sections of the ditches that did not previously undergo remediation. Please provide, by area of concern, the rationale for not including ditches and sections of ditches in the remediation plan.

No Further Action Determinations: EPA notes that NJDEP's comment letter contains No Further Action (NFA) determinations for specific SWMUs, and indicates that these SWMUs should be identified as No Further Investigation (NFI). These however are preliminary determinations; remedy selections, including no further action determinations, are subject to public notice and comment prior before final approval under EPA's Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendments (i.e., HSWA) permit.

Please provide a written response to EPA and the NJDEP comments within thirty (30) calendar days of receipt of this letter. We recommend discussion of these comments prior to submittal of a written response. Should you have any questions or wish to discuss this matter, please contact James Haklar, of my staff, at (212) 637-3037 or at haklar.james@epa.gov.

Sincerely,

For Ben Conetta, Chief
Corrective Action Section
Hazardous Waste Programs Branch

Enclosure

cc: Helen Dudar, NJDEP-BCM w/encl.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
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BOB MARTIN
Commissioner

January 30, 2017

Theresa Hwilka
USEPA, Region II – 22nd Floor
290 Broadway
New York, NY 10007-1866

Re: Chemours Chambers Works
Comprehensive RCRA Facility Investigation Report dated October 2014,
Appendix A Fact Sheets for AOCs and SWMUs dated September 2014,
Comprehensive RFI Supplemental Information Soil Data Post Maps dated September 2015 & *2014 Comprehensive RFI Supplemental Information SWMU Documentation* dated April 2016
Route 130
Deepwater, Salem County
SRP PI # 008221

Dear Ms. Hwilka,

The above referenced documents have been reviewed in accordance with the Technical Requirements for Site Remediation (N.J.A.C. 7:26E), and NJDEP policy and guidance. Preliminary comments relative to the October 2014 RFI were previously provided to the EPA via email, see attached, several points of which were then adequately addressed via subsequent submittals (Soil Post Maps and SWMU Documentation). Comments to the Soil Post Maps were also provided. The following includes those points or issues not yet addressed, as well as additional comments generated by the review of each of the above submittals.

A RCRA Facility Investigation, or RFI, is considered analogous to a CERCLA (or Technical Requriements) Remedial Investigation, and is to include the complete delineation of *all* AOCs and SWMUs. Although it is understood Chemours considers several areas of the facility (e.g. Delaware River sediment evaluation, DNAPL under Delaware River, Salem Canal) to be on different "paths", and therefore did not include the bulk of those evaluations in the RFI, until such time as all AOCs and SWMUs are adequately delineated, the RFI will not be considered complete.

As further discussed in comments regarding the Fact Sheets submittal, Chemours has acknowledged the reference to No Further Action (NFA) within the RFI is inaccurate, and has indicated that, in most cases, No Further Investigation (NFI) was the intended designation and/or proposal. As the NFA designation is widely used, however, referencing 59 of the 68 SWMUs

and each of the 11 AOCs in the manufacturing area as recommended for an NFA for soil, this is misleading and both the RFI (and Appendix A Fact Sheets) should be revised accordingly.

Comments specific to each SWMU and its proposed designation are provided in the comments to *SWMU Documentation* dated April 2016, found at the conclusion of this letter.

Section 2.2.1
To clarify, although the RFI states "results indicated that ground water is not adversely impacting surface", according to information in the files, the Department did not agree that the discharges are negligible. It is also not agreed all required sediment and possibly surface water sampling of the Delaware River is completed (see Ecological Issues, below).

Section 2.3
Page 8 – for clarification - the RAP application was subsequently withdrawn, as recommended, to be resubmitted at a later stage in the remedial process.

Section 2.5.1
See specific remarks relative to individual SWMUs under comments to *SWMU Documentation,* below.

Section 2.5.7 - Corrective Measures

SWMU 39-1
Monitored natural attenuation (MNA) is proposed. Based upon information found in the files, however, the RASR referenced in the RFI was found unacceptable in August of '09, due to the high levels of BTEX and naphthalene in the ground water. At that time, it was suggested perhaps enhanced bioremediation would be acceptable, or a technology (e.g. bioslurping) where oxygen is slowly injected in the ground and bioremediation is stimulated, but issues often associated with air sparging are not encountered.

SWMU 45-2
Ensure the comments (and results from same) noted in Ecological Issues, below, are incorporated into evaluation of options.

Vapor Intrusion
The Vapor Intrusion investigation remains ongoing.

Ground Water (and DNAPL)

E Aquifer

The report states that the contamination detected at concentrations greater than the Ground Water Quality Standards (GWQS) within the E Aquifer are localized and is a result of failed well

casings. In addition, the report claims the contamination in the E aquifer is contained by the E aquifer recovery well system.

The ground water monitoring and containment systems for the E aquifer, however, appear to be under designed. For example, there is a relatively low quantity of monitoring and hydraulic control/recovery points completed in the E aquifer with respect to the size of the distribution area for the ground water contamination.

Consequently, Chemours shall provide the evidence and rationale used to establish these conclusions. Chemours should also evaluate an upgrade to the monitoring and containment systems in order to adequately address the E aquifer contamination. In addition, Chemours should submit a status report regarding the most current investigation, monitoring, and remedial activities that are addressing the E aquifer.

In the Manufacturing Area there were numerous ground water samples collected from sampling points completed within the D aquifer that contain contaminant concentrations significantly greater than the GWQS (Fig. 7-7 and Fig. 7-11 of report). However, no companion E aquifer sampling points were installed at many of the contaminated D aquifer sample locations for further evaluation of vertical contaminant migration into the E aquifer (Fig.7-8 and Fig. 7-12 of report).

The Department considers the lack of E aquifer points completed at contaminated D aquifer monitoring wells to be a data gap. Chemours shall submit or reference the rationale used to conclude that additional E aquifer wells were not needed at many of the contaminated D aquifer monitor wells. Chemours shall also evaluate the need for the installation of E aquifer sampling points at additional D aquifer sampling locations.

DNAPL

The report indicates there is significant site-wide distribution of evidence for the presence of DNAPL and DNAPL sources. However, it appears that the DNAPL recovery and containment systems are under designed with respect to the distribution and quantity of DNAPL present at the site. For example, there appears to be too few DNAPL collection and containment points to adequately address the large area of site wide DNAPL distribution.

Chemours shall elaborate on this apparent discrepancy. Chemours shall also evaluate and report on the need to upgrade the design of the DNAPL collection/containment systems.

Miscellaneous

Finally, based upon the DGW and other submittals, additional delineation and/or monitoring of the ground water is necessary in several locations of the site. This includes, but is not limited to, the Secure C Landfill and certain areas of the perimeter, as has been discussed in correspondence directly with Chemours (with a copy provided to EPA), relative to renewal of the NJPDES

permit. As was briefly discussed in the April 28, 2016 Quarterly meeting, further characterization of the ground water flow regime at the facility's eastern property boundary is necessary in order to determine if sufficient hydraulic control in this area is present. The characterization should include, but not necessarily be limited to, the completion of ground water level measurements at an adequate number of both onsite and offsite monitoring points. The resulting measurement data should be presented on a ground water elevation contour map that encompasses both the onsite and offsite areas. This will assist in confirming adequate understanding of the flow regime (and therefore delineation) in that area of the facility.

Ecological Issues

Although the Executive Summary indicates ecological evaluations were completed earlier in the RFI process, the Department does not agree the previously performed evaluations were adequate for all ecological receptors.

Preliminary ecological comments were provided via email on January 9, 2015, however, are being reiterated and expanded upon. Individual *SWMU Documentation* comments may also contain remarks regarding ecological issues.

A March 2009 Ecological Investigation Report (EIR) evaluated potential risks to ecological receptors at the site. The investigation was conducted according to a February 2008 Revised EI Workplan and was intended to address NJDEP's recommendations for further evaluations specified in a previously submitted Baseline Ecological Evaluation (BEE). Ecological investigations were conducted in a phased approach, with the EIR focusing on the Carney's Point area and limited portions of the Chambers Works manufacturing area of the site. Investigation of the adjacent Salem Canal and Delaware River are being conducted separately from these on-site areas and being addressed as per ongoing discussions.

Ecological exposure areas were grouped into the following habitat categories having similar contaminant sources, migration and exposure pathways, and ecological receptors:

- Henby-Bouttown Creek System
- Henby-Bouttown Wetland System
- Carneys Point Ponds and Historic Ponds
- Carneys Point Uplands
- Manufacturing Ponds and B Basin.

Ecological exposures were evaluated based upon a tiered approach. The Tier I evaluation based potential exposures on a conservative scenario and the Tier II evaluation utilized a less-conservative site-specific scenario. The EIR concluded the only areas investigated that may pose unacceptable risks to ecological receptors were former ditches draining upland portions of Carneys Point into Bouttown Creek. The EIR recommended additional investigation of ecological exposures in the Bouttown Creek ditches and proposed to include "an assessment of

the bioavailability" of COPECs in sediments to "reduce uncertainty regarding potential risks to benthic communities associated with the ditches".

As noted above, ecological investigations in the Carney's Point area historically focused on elevated concentrations of site-related metals and organic constituents in sediments and hydric soils immediately adjacent to or within ditches draining to Bouttown Creek and Bouttown Creek itself (see figures 5-1 and 5-2 in the 2009 EIR). Following additional ecological investigations of the Bouttown Creek ditches to evaluate the bioavailability and toxicity of metals in sediments and a weight-of evidence evaluation of ecological risks, the Department supported the recommendation for no further investigation, provided environmental conditions in Bouttown Creek do not change dramatically.

In the RFI, potential ecological receptors and exposure points were reviewed, the RFI referencing previous reports and approvals, and concluding that the ecological review indicated no data gaps requiring further investigation.

SWMU 45-2

The Department has concerns, however, regarding soil sample results which potentially were not utilized in the ecological exposure evaluation of SWMU 45-2 in the Carney's Point uplands. Figure 6-3 of the RFI suggests that numerous soil sample locations outside of the depicted area of SWMU 45-2 (tinted beige) were not included in the evaluation. This concern is reinforced by also noting that Maximum Soil Exposure Point Concentrations for metals used in the Tier I Evaluation (see Table I-92 in the 2009 EIR) are significantly lower than concentrations of metals detected in surface soil samples collected outside of, but immediately adjacent to, the depicted SWMU 45-2 area. Examples include surface soil samples P2-C6B (5,020 ppm lead), P2-C5A (1760 ppm copper), and P2-C2A (890 ppm arsenic). Information is requested to explain this suspected omission, or re-examine the ecological exposure evaluation of this area.

1. In addition to potential food chain exposures, direct toxicity to soil invertebrates must be included in the ecological exposure evaluation.
2. It was noted that a Corrective Measures Study was recommended for SWMU 45-2 in 2013 (Table 6-1 of the RFIR).

Delaware River

Regarding the Delaware River, as indicated in Department's September 27, 2012 comments (attached) to the Delaware River RIR, delineation of the sediments was incomplete, and is to be accomplished during further ecological evaluation of the River, which the Department agreed may be deferred until hydraulic control was attained. Completion of the SPB wall along AOC 1, anticipated in the near future, should be the final step in achieving hydraulic control along the River; the additional ecological evaluation shall recommence shortly thereafter.

The Salem Canal investigation remains ongoing.

Section 7.4
PFOA
Table C.4-1 is referenced as a summary table of historical PFOA soil data. The table, however, does not provide the actual results. It is understood a CSM for PFCs is currently under development. Please ensure tables and maps include each analytical result, location, depth, etc, as has been discussed. Please advise if there are any questions.

Figures 7-22 through 7-24 illustrate the maximum exceedances in factors of exceedance (1-10, 10-1000 and >1000), rather than analytical results. As previously discussed, although these maps are beneficial, the Department also requires maps which include the actual analytical findings. It is acknowledged the required maps are submitted with the PFOA Monitoring Program; please ensure the CSM submittal also includes similar maps.

Figures

As previously indicated, the figures included in the RFI were insufficient for adequate review; additional figures representing sampling locations and findings were therefore submitted, in the form of "Supplemental Soil Data Post Maps". The review of the Soil Data Post Maps indicated significant exceedances of both the non-residential direct contact soil remediation standards (NRDCSRS) and the impact to ground water soil screening levels (IGWSSL). Comments to same were provided on December 31, 2015, attached, listing key, but not all, sampling points at which contaminants significantly exceeded the IGWSSL. Chemours should address the many significant exceedances of the IGWSSL, and indicate, with appropriate technical justification, how each exceedance is to be managed. The comment letter also stated Chemours should indicate how all exceedances of the NRDCSRS will be addressed.

Additionally, although it is agreed soil data from points which were subsequently removed via excavation should not appear on the maps, it appears the Soil Data Post Maps do not include all historic sampling findings, as is required, in all areas, e.g. SWMU 7 Fact Sheet indicates several samples were collected and elevated lead, among other COCs, is present to 7740 ppm (depth not reported), however, Soil Post Map MA-EAST-3 does not reflect same. The maps should reflect all data above standard for soils which remain.

APPENDIX A Fact Sheets

The Fact Sheets typically include exceedances of the NRDCSRS, with IGWSSL often included. Numerous exceedances of the IGWSSLs are of concern to the Department (see comments of December 31, 2015 regarding same) as additional action may be required to address what may be acting as continuing source material. Also, exceedances of the RDCSRS are of potential concern, as the post remediation exceedance of same necessitates establishment of a deed notice. Although post remediation exceedances of NRDCSRS will likely be the driving force and therefore the contaminant concentration incorporated into a deed notice, it is possible the RDCSRS for specific COCs or in specific AOCs will be the standard for which an exceedance

necessitates establishment of a deed notice at a given area. It is therefore recommended the Fact Sheets also include the RDCSRS.

As above, a large number of the SWMUs are listed as NFA (No Further Action). As has since been acknowledged by Chemours, however, this should typically read No Further Investigation (NFI). Each Fact Sheet should be amended as appropriate to reflect same, keeping in mind regulators have also not approved NFI for many of the SWMUs (see comments on the April 2016 *SWMU Documentation*, below). If not, each Fact Sheet should be amended to reflect the agreed upon designation, e.g. undergoing additional evaluation, CMS, etc.

For each AOC and SWMU which has not received a regulator designation of "NFA", tables should be revised to reflect NRDCSRS, rather than NRDCSCC. Additionally, many of tables state specific constituents have no applicable criteria. As several of these constituents do have standards at this time, these should be amended to reflect the current applicable standards.

It may be beneficial to include not only the contaminants of concern (COCs) within the tables contained in each AOC Fact Sheet, but also the extent and/or concentration range at which each is present (AOC 2 lead to 42,400 ppm), as is provided in the SWMU Fact Sheets. As a suggestion, it may also be of benefit to note on each table which of the September 2015 maps include which data (e.g. AOC 1 exceedances are found on several of the maps – MA-NW-1, MA-NW-3&4, MA-NW-6, MA-NW-5 and MA-1), for ease. Confirmation of findings was difficult without same. Incorporation of the COC results, and depths, will likely be necessary once filing of the deed notice is deemed appropriate.

Many of the Fact Sheets indicate a "site-wide deed notice will be established for the entire facility". The establishment of a site-wide deed notice (with engineering controls as needed) is conceptually acceptable, the filing of which would likely follow performance of approved remedial activities.

Fact Sheet for AOC 2 – Page 2 – Remedial actions were completed at SWMUs 17, 25, 39-2 and 57 – see individual *SWMU Documentation* comments, below.
SWMU 17 - As indicated in the individual SWMU comment, the Department does not agree sufficient remedial actions were completed at SWMU 17. This comment is applicable for all portions of the SWMU, not just that within AOC 2.
SWMU 25 – Although the asphalt was removed, it appears the underlying soil, containing lead up to 12,700 ppm was left in place.
SWMU 39-2 - No post excavation sampling was performed to confirm adequate soil removal.
SWMU 57 – The Fact Sheet for SWMU 57 specifically states no remedial action was performed.

Fact Sheet for SWMU 5A – Based on a review of the Soil Post Maps, it appears the table of results should be amended to include benzo(b)fluoranthene to 60, rather than 13 (PZ-5-3 at 2-2.5'), chrysene to 59, and lead to 1320. Naphthalene should be added, which was found at P2-5-3 at 2-2.5' from 0.37 to 4000, while mercury was found to 69; 1,4-DCB was also found at 44. The table of constituents which were "detected but do not have applicable criteria" should be amended to include those noted in Figure 12-7 of the PA, which indicates "results that remain"

include aniline to 120 and 4-chloroaniline to 32 ppm. The COCs which exceeded its IGWSSL should also include 1,2,6-trichlorobenzene, benzo(a)pyrene, nitrobenzene, naphthalene, benzo(a)anthrancene and benzo(b)fluorene, among others, as indicated on the Soil Post Map.

Fact Sheet for SWMU 5B – Constituents as noted on the maps but not in the Fact Sheet include Pb to 740 and mercury to 1.06 and nitrobenzene at 0.51, while the aniline and 4-chloroaniline noted on the Fact Sheet tables were not included on the Soil Post Maps.

Fact Sheet for SWMU 7 – It does not appear the majority of the analytical results of constituents listed on the tables are noted on the Soil Post Map MA-EAST-3, indicating they represent results from samples omitted from the map.

Fact Sheet for SWMU 9, 10, 11 – Although it is agreed reported constituent concentrations were below the applicable criteria, institutional controls are in place for these SWMUs as they were included in the Deed Notice previously recorded.

Fact Sheet for SWMUs 14 & 15 – The Department's file indicates the A Basin Vault is no longer in use and was given a designation of NFA on August 24, 2010. The Fact Sheet should be revised (Fact Sheet Date noted as 3/22/02), or the Department should be notified if its records are inaccurate.

Fact Sheet for SWMU 17/17A – As stated, the Department is not in agreement that no additional action is necessary; see comments under *SWMU Documentation.*

Fact Sheet for SWMU 26 – The Fact Sheet states "numerous PCBs were detected in groundwater", but provides no table, nor range of findings, instead refers to the Phase III Report. As with other Fact Sheets (and other constituents within this Fact Sheet), this information should be provided within the Fact Sheet.

Fact Sheet for SWMU 41-2 – A single soil sample is referenced as collected from the SWMU, however, it appears another was within this area during the Data Gap sampling – Int-VZH-090, which noted slightly elevated levels of several PAHs.

Fact Sheet for SWMU 41-6 – The Fact Sheet does not include results from April '94 (lead at 480 ppm and ben(a)pyrene 0.53 ppm) and December '11 sampling (arsenic slightly elevated at 20.7 ppm) which appears to be within the area of the SWMU.

Fact Sheet for SWMU 45-2 – It would be beneficial to include the range of results found, e.g. arsenic to 5190 ppm, lead to 11,800 ppm, zinc to 9500 ppm, mercury to 12.8 ppm, benzo(a)anthracene to 160 ppm, benzo(b)fluorenthene to 130 ppm, etc. (Soil Post Map CP-6).

Fact Sheet for SWMU 46 – The SWMU was included in the Deed Notice recorded August 2002, which necessitates the performance/completion of a Biennial Inspection Report. Page 3 indicates no institutional controls are required as all constituent concentrations are below the NRDCSCC. Although it is not specified whether the constituent concentrations exceed the Residential criteria/standard, institutional controls in the form of a Deed Notice are required for

any constituent remaining above the RDCSRS, while exceedances of the NRDCSRS require the additional measure of engineering controls.

Fact Sheet for SWMU 52 – Soil Post Maps indicate lead is found above the RDCSRS, but below the NRDCSRS beyond the boundaries of the remediated area, but Table 6-1 of the RFI indicates lead slightly exceeds the NRDC standard; clarification is requested. It is also recommended the exceedances remaining be included in the Fact Sheet.

June 19, 2015 Supplemental Info for SWMU Review Meeting &
April 2016 SWMU Documentation (received April 28, 2016)
2014 Comprehensive RFI Supplemental Information

Although a list of SWMUs should remain active until such time as an individual SWMU is adequately remediated/addressed, tracking by AOC rather than SWMU, when possible, is acceptable (and even preferable) to the Department, as remedial activities are not typically SWMU specific nor driven, and would allow sampling, planning and application of remedies without constraints of SWMU boundaries. As designation and tracking of the SWMUs is under the purview of EPA, final decision regarding the tracking and status of each SWMU is deferred to EPA.

The comments below are in response to review of the above referenced information submitted to document the current status of each SWMU, and are primarily provided in an order similar to the submittal's *SWMU Status and Documentation Table* dated April 21, 2016. The categories underlined below are as designated in the April '16 table, pages 1 through 5.

RCRA Part B Permitted Operating Unit

SWMUs 18, 23, 24, 27 & 29
It is agreed these SWMUs are RCRA Part B permitted Operating Units, and are considered by the facility as following a different path than those SWMUs undergoing correction action. As the units do, however, appear to meet the EPA's definition of a SWMU ("any unit at a facility from which hazardous constituents might migrate, irrespective of whether the units were intended for the management of solid and/or hazardous wastes"), it does not seem they should be removed from consideration as SWMUs.

Corrective Measures Study Proposed

SWMUs 8, 39-1, 40, 45-2
The proposal for performance of a Corrective Measures Study is acceptable at each.
SWMU 39-1 - As indicated in the RFI comments, however, based upon information found in the file, the determination was made in August 2009 the concentrations of BTEX and naphthalene in

the ground water were too high for a monitored natural attenuation remedy. Additional (more current) information is necessary to determine the appropriate remedy.

Army Corps of Engineers Lead

SWMU 33 (Manhattan Project)
Although it is agreed the Army Corps of Engineers (ACE) is lead for contamination relating to the Manhattan Project, contaminants of concern unrelated to the Manhattan Project have been noted. Any contamination unrelated to the Manhattan Project that remains following ACE remedial activities, however, must be addressed by Chemours.

NJDEP NFA (10/21/02) – Deed Restrictions Recorded

SWMUs 9, 10 11, 14, 15, 16, 32B, 37, 41-4, 41-5, 41-6, 41-7, 46, 47, 54 & 61
Each of these SWMUs was included in the Department's Restricted NFA letter of October 21, 2002. It is agreed removal of these SWMUs from the active SWMU list is acceptable.

SWMU 13 – Secure C Landfill – Cell 1
Although this SWMU was included in the October 21, 2002 DEP issued Restricted NFA letter, no soil sampling was performed in/around this single lined area, and ground water is impacted. As such, the unit should remain on the list of SWMUs.

RCRA Clean Closed Under NJDEP

SWMUs 20, 21, 22, 26 & 28
Although it is agreed each of these SWMUs were "RCRA clean closed", insufficient information has been provided to allow for the requested removal from the active SWMU list, or determination of no further action required. It is not clear RCRA closure activities were adequate to ensure no contamination remains or to evaluate whether contamination had migrated from the unit. To obtain a determination that no further action is necessary, information must be provided which substantiates the "closure" previously undertaken was sufficient to comply with evaluation as required by applicable guidance documents and Technical Requirements for Site Remediation, N.J.A.C. 7:26E.

SWMU 25
The SWMU was described as an asphalt covered area used for storage of lead waste. Although it is agreed the RCRA regulated unit was delisted in 1992, it is not clear the term "RCRA clean closed" is accurate. It appears the asphalt layer only was removed, leaving undisturbed the underlying soil containing lead concentrations up to 12,700 ppm (included in the *Soil Post Map* comments as a significant exceedance requiring additional information), which was subsequently covered by geotextile and stones. Although submittals indicate the area is to be handled under SWMU 57, SWMU 25 does appear to continue to meet the definition of a SWMU, and should be neither NFA'ed nor removed from the list of SWMUs.

Regulator Approval/EPA No Further Action Letter

SWMU 42
As per the Department's December 6, 2010 letter, no additional investigation is necessary. The request to remove this SWMU from the SWMU list is acceptable to the Department.

SWMUs 19, 32A & 51
As indicated, the EPA/NJDEP approved no further action on March 25, 1993 (SWMUs 19, 32A), and July 25, 1995 (SWMU 51). It is agreed removal of the SWMUs from the SWMU list is acceptable.

SWMU 39
Although the comment included in the December 6, 1993 correspondence indicates the Department agreed no additional action was necessary, no sampling was performed during removal of the 19 USTs, and a formal determination of no further action is therefore not appropriate. A ground water corrective measures study, as proposed, is appropriate. The SWMU should remain on the list at this time.

SWMUs 38, 49 & 50
In March of 1993, regulators agreed no further action was necessary. The request to remove these SWMUs from the SWMU list is acceptable to the DEP.

SWMUs 48-2 & 48-4
EPA and the Department agreed no further action was required in 1993. The request to remove these SWMUs from the active SWMU list is acceptable, however, SWMU 45-9, which traverses the area, should remain open as only one foot of soil was remediated, and soil contamination remains.

Improperly Identified as SWMU

SWMUs 35, 36, 44 & 53
It is agreed these areas were misidentified as SWMUs, and removal from the list of SWMUs is acceptable. As indicated on the SWMU Status and Documentation Table, a ground water corrective measures study in the areas of SWMU 35 and 36, located in AOC 1, is proposed in the RFI, as the extent of ground water contamination extends beneath AOC 1; this is acceptable.

No Further Investigation for Soil Proposed

SWMUs 1 / 2
Although it is agreed a crushed stone cap is currently in place, benzene, 1,4-dichlorobenzene and naphthalene are noted as present. Given that these contaminants are inhalation exposure

pathway driven, a crushed stone cap may not be adequate. Additional information/justification of protectiveness of this cap is necessary.

SWMU 3
Located within the SWMU 8 boundary, no exceedances were noted at this SWMU. Removal from the list of SWMUs is acceptable.

SWMU 4
Lead is found to 1730 ppm in soil at this former incinerator. As such, it should remain a SWMU, unless documentation is submitted which demonstrates the contamination is unrelated to SWMU 4 activities, or until a determination of no additional action necessary is made.

SWMUs 6 & 57
Located within AOC 2, the June '15 draft table for SWMU 6 indicates no metals exceedances were found, while Table 7-1 of the RFI indicates lead above NRDCSRS is present. Neither Appendix C3 of the RFI nor the Fact Sheet provided in Appendix A entirely distinguish the SWMU 6 data from the SWMU 57 data, rendering it difficult to determine where the exceedances of lead are located, however, Soil Post Map MA-SW-10 indicates INT-VZH-014 was located within SWMU 6, where lead was noted to 967 ppm (0-1'). The map did not include the 6-6.5' interval which exhibited lead at 811 ppm. Fact Sheets indicate SWMU 6 is being investigated under SWMU 57, which exhibits lead in soil to 32,700 ppm, although MA-SW-10 appears to indicate lead at 42,400 ppm from 1.2-2' in INT-VZM-047. It is not clear delineation is complete. Additional information is needed prior to determining no additional investigation is necessary.

SWMU 7
The Fact Sheet indicates at least three samples were collected, and lead (among other COCs) is present to 7470 ppm. The RFI and Soil Data Post Maps do not reflect this, displaying only one sample location, the findings of which largely do not correlate to those reported in the Fact Sheet. The Fact Sheet also does not include the PCB IGWSRS exceedance noted on Map MA-1. Additional information regarding this SWMU is needed prior to rendering a decision.

SWMUs 18A, 34
It is agreed no further investigation of the soils is necessary; ground water in the area is to be addressed via the GW CMS. Removal of the SWMU from the active SWMU list is acceptable.

SWMU 30
SWMU 30 consists of Sanitary Landfills A and B, which received elastomeric waste, oils, tars, silt, iron hydroxide, aluminum hydroxide, iron oxide, rubble, asbestos, plastic, bottom ash and fly ash. Additionally, based upon a recent email dated January 3, 2017, from Chemours' Ed Lutz, disposal activities in Sanitary Landfill B are to resume. Given the wastes received, the size of the SWMU, and the ongoing nature of the disposal activities, the SWMU should be retained and evaluated; evaluation may be performed under the CMS for SWMU 8.

SWMU 41-1
Previously identified as a drum storage area used to store raw materials, finished products and waste material, the southern half of the area remains active. A single sample was reported collected; although the Fact Sheet indicates no exceedances were found, benzo(a)anthracene was above the IGWSSL and benzo(a)pyrene above the NRDCSRS. Although it is agreed no additional soils investigation is necessary at this time, as the southern half of the area remains active, the SWMU should remain on the active SWMU list.

SWMU 41-2
Although the Fact Sheet and June '15 SWMU Table reference only sample location P3-41-2-1, which exhibited no exceedances, Soil Post Map MA-EAST-2 indicates sample location INT-VZH-090 is also at this SWMU. INT-VZH-090 exhibited levels of PAHs above NRDCSRS. It is unclear where delineation to the south is deemed completed.

SWMUs 55-1, 55-2 & 55-6
Fill Deposition Areas 1,2 & 6 were found to have no levels of contamination above NRDCSRS; it is agreed no further investigation is necessary. Removal of the SWMUs from the list of active SWMUs is acceptable.

SWMUs 55-3
Among the elevated levels of constituents noted are 1,4-Dichlorobenzene, benzene and naphthalene. Although ground water in the area was not sampled, the Fact Sheet indicates the area may be a continuing source. Additionally, the area is noted as having a surface cover "barrier" of crushed stone. Given that the referenced contaminants are inhalation exposure pathway driven, a crushed stone cap may not be adequate. Further evaluation/justification of protectiveness is necessary.

SWMU 55-4
Elevated levels of metals, VOs and semi-volatiles have been noted within the 17-acre fill deposition area, with the highest concentrations found, as noted in the Fact Sheet, at location P2-554-6. As some of the constituents found are inhalation exposure pathway driven, evaluation as to adequacy of any existing cover/"cap" should be performed.

SWMU 55-5
Levels of lead and PAHs are found above the NRDCSRS; as such, engineering controls acceptable to regulators must be in place and incorporated into a Deed Notice.

SWMU 59
It is agreed no additional investigation is necessary; removal of the SWMU from the list of active SWMUs is acceptable.

SWMU 60
Although elevated levels of several COCs were noted, it is agreed they are not related to SWMU 60, but rather, to the historic basin drainage ditch. No further investigation is necessary; removal of the SWMU from the active SWMU list is acceptable.

SWMU 62
It is agreed no further investigation for soil is necessary.

SWMU 63
Analytical results indicate levels of N-Nitrosodiphenylamine and Naphthalene in soil significantly exceed the IGWSSL. As per previous comments (see DEP comment letter of December 31, 2015, attached), these exceedances should be addressed.

No Further Action for Soil Proposed

SWMU 31
The Fact Sheet indicates the soil analytical results were below concern; it is agreed no additional action for soils is necessary and the SWMU may be removed from the active SWMU list.

SWMU 41-3
The Soil Post Maps (e.g. MA-SW-5) appear to indicate the sampling point referenced in the Fact Sheet (P3-41-3-1) was not collected within that area designated as SWMU 41-3. Clarification is required.

SWMU 41-8
Benzo(a)pyrene was found above NRDCSRS; although it is agreed no further active remedial efforts are necessary at this SWMU, until such time as the engineering controls are formally established in a Deed Notice, a designation of no further action is not appropriate.

SWMUs 45-1, 45-5 & 48-1
Levels of soil contamination above NRDCSRS are noted. As above, until such time as an agreed upon engineering control is in place and formally established in a Deed Notice, a designation of no further action is not appropriate.

SWMU 45-3
Although no exceedances are reported in the June 2015 SWMU Summary Table or Soil Data Post Maps CP-1 through CP-4, the Fact Sheet indicates a slight exceedance of the RDCSRS for benzo(b)fluoranthene. As such, an entire site Deed Notice as referenced in the Fact Sheet is appropriate; no additional action for soils is necessary and removal from the list of active SWMUs is acceptable.

SWMU 45-4, 45-6, 45-7, 48-3, 48-5, 48-6, 48-7
Levels of contaminants in soil are reported below concern. It is agreed no additional action for soils is necessary and removal from the list of active SWMUs is acceptable.

SWMU 45-8
The June 2015 SWMU Summary Table and Soil Post Map CP-2 display no soil exceedances noted, however, the Fact Sheet indicates several PAHs are found above NRDCSRS. As such, engineering controls (included in a Deed Notice) would be required. Clarification is necessary.

SWMU 55-7
Based upon soils analytical results, it is agreed no additional action for soils is necessary. The request to remove the SWMU from the list of active SWMUs is acceptable.

SWMU 58
It is agreed no additional action regarding soils is necessary; removal of the SWMU from the list of active SWMUs is acceptable.

Remediation Area (IRM/ISM/excavation completed)

SWMU 5A
The letter included as Attachment 12 indicating approval of the RAR is marked "Draft"; please provide a final copy. Among those contaminants found beneath the vegetative cover in the former disposal area are 1,4-dichlorobenzene (44 ppm) and naphthalene (4000 ppm). Also, given that these contaminants are inhalation exposure pathway driven, concern arises regarding the adequacy of a vegetative cap. Several constituents at this area were previously noted (December 31, 2015 correspondence) as significantly exceeding the IGWSSL. As such, comments as to how the significant exceedance of the IGWSSL was/is to be adequately addressed was requested. Based upon review of the Soil Data Post Maps, these sample locations include P2-5-3 (naphthalene to 4000 ppm, mercury 69 ppm and lead 1320 ppm). Information should be provided to address each concern.

SWMU 5B
As above, the October 2002 RAR approval letter provided as Attachment 12, is marked "Draft"; please provide a final version. Sediment removal was performed, however, elevated levels remain, which, although apparently not included in the more recent submittals, were found in Figure 12-7 of the Preliminary Assessment (PA), and the 2011 Delaware River RIR. As indicated in the referenced draft 2002 approval letter, and the more recent September 27, 2012 (attached) comments to the Delaware River RIR, delineation of the sediments was incomplete, and is to be accomplished during further ecological evaluation of the River, which the Department agreed could be deferred until hydraulic control was attained (which should be upon completion of the SPB wall along AOC 1).

SWMU 12
Located on top of SWMU 55-1, SWMU 12 impacted soils were excavated and the area backfilled, as reported in 1990. Although analytical data was not submitted, based upon information in the Fact Sheet, it is agreed removal of the SWMU from the list of active SWMUs is acceptable.

SWMU 17/17A
As has been discussed, the Department does not agree that no additional investigation along the ditches is necessary. The soil removal action previously taken did not necessarily remove all source material. Although it is agreed the NJDEP issued an approval of the "Response To Comments Report – Process Water Ditch System" on December 2, 1997, the letter specifically states, "because there were no post excavation samples, this area will have to be included for further investigation as part of RCRA Facility Investigation."

SWMU 43
The Fact Sheet indicates site related compounds were found in basin sediments, however, neither the June 2015 SWMU Summary Table, RI Data Tables, Fact Sheet, nor Soil Post Maps appear to provide the data. As with SWMU 5, although the Fact Sheet and Attachment 12 indicate the RAR for SWMU 43 was approved in October of 2002, the RAR approval letter submitted is a letter marked "Draft". Please submit the final version of the approval letter. A figure was found in the PA (Figure 12-7), which indicated levels of aniline and 4-chloroaniline remain; it is unclear what – if any - other constituents may be present above residential.

SWMU 45-9
Although remedial efforts were undertaken, only a single foot of soil was removed; the remainder of the SWMU appears to remain uncharacterized. Additional information is necessary.

SWMU 52
Remedial activities included stabilization, excavation, and capping. Lead is found above RDCSRS, but below NRDCSRS outside of the remediated area. It appears the final issue remaining is inclusion of any remaining exceedances in a Deed Notice, with engineering controls as appropriate.

SWMU 56/56A
A designation of NFI (no further investigation) is proposed in the submittal table, with Attachment 15 referenced as providing documentation for same. Attachment 15, however, specifically references the "extremely high" levels of ODCB found in the post excavation (following the interim remedial measure) soil sampling results, stating it appears a significant source was yet to be investigated, and referencing the requirement for "additional investigation or work".

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

Linda S. Range

C: Steve Byrnes, ETRA
Jeff Griesemer, BGWPA
Allan Motter, BEERA

State of New Jersey

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BOB MARTIN
Commissioner

December 31, 2015

Sin-Kie Tjho
USEPA, Region II – 22nd Floor
290 Broadway
New York, NY 10007-1866

Re: Chemours Chambers Works
Comprehensive RFI Supplemental Information Soil Data Post Maps, Dated September 2015
Route 130
Deepwater, Salem County
SRP PI # 008221

Dear Mr. Tjho,

The Department has reviewed the above referenced 2014 Comprehensive RFI Supplemental Information Soil Data Post Maps (CRFISI), dated September 2015 in accordance with the Technical Requirements for Site Remediation (N.J.A.C. 7:26E), and NJDEP policy. The CRFISI was prepared by AECOM, Newark, Delaware for the Chambers Works, Deepwater, Salem County, New Jersey site. Comments for your consideration are as follows.

The CRFISI is acceptable as presented. The figures, however, indicate significant exceedances of both the non-residential direct contact soil remediation standards (NRDCSRS) and the impact to groundwater soil screening levels (IGWSSL). The following table lists contaminants which significantly exceed the IGWSSL. This table is not an all-inclusive list and does not consider the NRDCSRS. Differing colors within the table are significant only of input by different case team members. Chemours should address the many significant exceedances of the IGWSSL, and indicate, with appropriate technical justification, how each exceedance is to be managed. Chemours should also indicate how the exceedances of the NRDCSRS will be addressed.

Comments relative to the Supplemental RFI Report SWMU Review (Draft SWMU Summary Table dated June 19, 2015) and RFI Fact Sheets for AOCs and SWMUs should be forthcoming in the latter portion of January 2016.

Please contact this office with any questions.

Sincerely,

Linda S. Range

Linda S. Range

DuPont Chambers Works
2014 Comprehensive RFI Supplemental Information
Soil Data Post Maps

Figure	Sample Point	Contaminant	Concentration (ppm)
MA-NW-1	INT-VZH-071S	1,4-Dichlorobenzene	720
	PIS-061	1,4-Dichlorobenzene	130
	SLA 9_75(A)N-Sidewall	1,2-DCE	160,000
MA-NW-2	P2-56-4-S	1,2-Dichlorobenzene	190,000
	P2-553-1	1,4-Dichlorobenzene	100
	P2-553-1_3.5-4'	Chlorobenzene	3,100
	P2-553-2	1,4-Dichlorobenzene	400
	P2-553-3	1,4-Dichlorobenzene	340
		Benzene	59
MA-NW-3	P2-5-3	Naphthalene	4,000
MA-NW-4	HPWDS-B1-13	Benzo[a]pyrene	150
	BDC-4-30	hexachlorobenzene	30
	P2-553-1	Naphthalene	220
	P2-553-2	Naphthalene	300
	P2-553-3	Naphthalene	8,300
	P2-554-6	Naphthalene	690
MA-NW-5	INT-VZH-002	Mercury	107
	P2-5-3	Mercury	69 & Pb 1320
MA-NW-6	BDC-1	Lead	2,280
	BDC-4	Antimony	1,800
	BDC-5	Lead	1,480
	BCD-10	Lead	76,200
	D2S1-8S3	Lead	7,400
	INT-VZH-007	Lead	5,020
	INT-VZH-003	Lead	1,630
	INT-VZH-008	Lead	1,460
	INT-VZH-095	Lead	4,100
	INT-VZM-028	Lead	7,390
	INT-VZN-002	Lead	1,970
	P2-553-2	Antimony	1,020
	P2-553-2_3.5-4'	Mercury	22
	P2-554-10	Lead	2,270
	P2-554-4	Lead	2,900
	P2-554-8	Antimony	4,040
	P2-57-1	Lead	1,330
	P2-554-6_3-3.5'	lead	10,600
	P2-554-5_2.5-3'	Mercury	43
	P3-57-36_2.5-3'	lead	2,100
	P3-57-35	Lead	1,330
MA-EAST-1	INT-VZS-002	1,4-Dichlorobenzene	110
	M09	1,4-Dichlorobenzene	190
	SWMU_8-TP-8	Tetrachloroethene	300
		Trichloroethene	250
MA-EAST-2	INT-VZS-002	Naphthalene	160
	M09	1,2-Diphenylhydrazine	110

Figure	Sample Point	Contaminant	Concentration (ppm)
MA-EAST-3	INT-VZS-002	Lead	8,920
	INT-VZS-004	Lead	1,730
	P2-555-3	Mercury	10
	P3-21-2	Lead	2,630
	P11	Lead	2,210
	SWMU_8-TP-3	Lead	30,300
	SWMU_8-TP-4	Mercury	27
	SWMU_8-TP-5	Mercury	63
	SWMU_8-TP-5	lead	17,000
	SWMU_8-TP-7	Mercury	80
	SWMU_8-TP-7	Lead	18,800
	SWMU_8-TP-8	Lead	20,300
		Mercury	59
	SWMU_8-TP-9	Mercury	14
	SWMU_8-TP-10	Lead	2,070
		Mercury	19
MA-SW-1	INT-VZH-029	Tetrachloroethene	8,400
	INT-VZH-086	1,4-Dichlorobenzene	130
		Tetrachloroethene	29
	P2-D1S3-2	1,4-Dichlorobenzene	210
MA-SW-2	HPWDS-B1-7-1	Chlorobenzene	250
	HPWDS-B1-7-2	Chlorobenzene	260
	HPWDS-B1-9-2	Chlorobenzene	150
MA-SW-3	G10-M01B	Toluene	140
		Xylenes	240
	INT-B002	1,2-Dichlorobenzene	480
		1,4-Dichlorobenzene	240
		Chlorobenzene	1,000
	INT-B023	1,4-Dichlorobenzene	130
		Benzene	170
		Chlorobenzene	10,000
		Trichloroethene	20
	INT-VZH-024	1,2-Dichlorobenzene	680
		Chlorobenzene	190
		Toluene	150
		Xylenes	110
	INT-VZM-029	Benzene	800
	INT-VZH-057	1,2-Dichlorobenzene	270
	SB017	1,2-Dichlorobenzene	270
		Chlorobenzene	170
	SB030	1,2-Dichlorobenzene	1,100
		Chlorobenzene	510
	SB080	Chlorobenzene	130
	SB085	Chlorobenzene	860
MA-SW-4	P4-63-1	Chlorobenzene	100
MA-SW-5	INT-VZM-060	hexachlorobenzene	19
MA-SW-6	HPWDS-B1-10-2	Benzo[a]pyrene	140

DuPont Chambers Works
2014 Comprehensive RFI Supplemental Information
Soil Data Post Maps

Figure	Sample Point	Contaminant	Concentration (ppm)
MA-SW-7	ARA2TNWS	2,4-Dinitrotoluene	860
	ARA-5+00N-N	2,4-Dinitrotoluene	400
	ARA-5+00N-S	2,4-Dinitrotoluene	24,000
		2,6-Dinitrotoluene	200
	ARA-6+25-B	2,6-Dinitrotoluene	640
	G10-M03B	2,4-Dinitrotoluene	1,600
		2,6-Dinitrotoluene	620
	INT-B023	2,4-Dinitrotoluene	2,400
		2,6-Dinitrotoluene	700
		Naphthalene	1,700
		Nitrobenzene	190
	INT-VZH-029	2-Methylnaphthalene	310
		Benzo[a]anthracene	210
		Benzo[b]fluoranthene	150
		Benzo[a]pyrene	120
		Chrysene	140
		Fluorene	230
		Naphthalene	390
	INT-VZH-040	Benzo[a]anthracene	110
		Benzo[b]fluoranthene	110
	INT-VZH-065	2,4-Dinitrotoluene	680
		2,6-Dinitrotoluene	3,100
		Nitrobenzene	110
MA-SW-8	P4-63-2	N-Nitrosodiphenylamine	100
	P4-63-3	N-Nitrosodiphenylamine	110
	P4-63-13	N-Nitrosodiphenylamine	120
	P4-63-14	Naphthalene	120
MA-SW-9	INT-VZH-029	Lead	9,010
	INT-VZH-030	Lead	1,880
	INT-VZH-039	Mercury	19
	INT-VZH-068	Lead	1,100
	INT-VZH-069	Copper	17,500
	INT-VZH-072	Lead	995
	INT-VZM-060	Lead	5,590
		Mercury	522

Figure	Sample Point	Contaminant	Concentration (ppm)
MA-SW-10	HWPDS-B1-3-1	Lead	1,500
	HWPDS-B1-3-2	Lead	2,210
	INT-VZH-009	Lead	3,980
	INT-VZH-014	Lead	967
	INT-VZH-019	Lead	10,500
	INT-VZH-023	Lead	1,200
	INT-VZH-025	Lead	1,490
	INT-VZH-072	Lead	2,920
	INT-VZH-102	Lead	26,100
	INT-VZM-022	Lead	2,360
	INT-VZM-034	Lead	2,010
	INT-VZM-047	Lead	42,400
	INT-VZM-048	Lead	969
	INT-VZN-004	Lead	1,700
	P3-25-1	Lead	12,700
	P3-25-2	Lead	5,770
	P3-25-3	Lead	9,470
	P2-57-13	Lead	5,260
	P2-57-14	Lead	32,700
	P2-57-15	Lead	7,400
	P2-57-17	Lead	27,400
	P2-57-18	Lead	1,440
	P2-57-19	Lead	6,460
	P2-57-20	Lead	10,600
	P2-57-21	Lead	5,410
	P2-57-22	Lead	964
	P2-57-28	Lead	3,690
	P2-57-29	Lead	7,800
	P2-57-30	Lead	1,670
	P2-57-33	Lead	2,400
	P2-57-34	Lead	1,610
	TB-9	Lead	1,890
	TB-11	Lead	2,830
	TB-13	Lead	1,850
MA-SW-11	A-DITCH-D2S2-11N6	Lead	1,660
	D2S3-13	Lead	959
	G10-M01B	Lead	1,430
	INT-VZH-011	Lead	20,300
	INT-VZH-039	Lead	982
	INT-VZH-054	Lead	3,660
		Mercury	14
	INT-VZH-065	Lead	1,040
	INT-VZH-076	Lead	4,080
	INT-VZH-087	Lead	2,300
	INT-VZH-088	Lead	1,190
	P2-D2S7-2	Lead	5,400
	P2-D2S312-1	Lead	6,900
MA-SW 12	CPT-G05-03A	Cadmium	150
CP-6	45-2-4	Benzo[a]anthracene	160
		Benzo[b]fluoranthene	130
		Benzo[a]pyrene	110

DuPont Chambers Works
2014 Comprehensive RFI Supplemental Information
Soil Data Post Maps

Figure	Sample Point	Contaminant	Concentration (ppm)
CP-7	45-B-5	Lead	3,410
	45-B-8	Lead	3,700
	45-2-1	Lead	1,060
	45-2-14	Lead	1,540
	45-2-15	Arsenic	2,400
	45-2-16	Lead	4,600
	45-2-17	Lead	1,800
	45-2-18	Lead	2,800
	45-2-19	Arsenic	1,900
		Lead	4,100
	CPR-452-D1	Lead	1,120
	CPR-452-D4	Lead	3,070
	P1-5	Lead	2,070
	P1-2	Arsenic	5,190
	P1-2	Lead	11,800
	P2-A4A	Lead	1,000
	P2-B2B	Lead	1,410
	P2-B4A	Lead	1,190
	P2-B4B	Lead	1,200
	P2-B5A	Lead	2,830
	P2-B5B	Lead	2,930
	P2-B6A	Lead	5,020
	P2-B6B	Lead	2,260
	P2-C1A	Lead	2,440
	P2-C2A	Lead	2,370
	P2-C2B	Lead	940
	P2-C4B	Lead	1,320
	P2-C4A	Lead	1,870
	P2-C5A	Lead	1,000
	P2-C5B	Lead	2,400
	P2-C6A	Lead	2,670
	P2-C6B	Lead	2,190
	P2-C7A	Lead	3,630
	P2-C7B	Lead	2,880
	P2-D2A	Lead	2,980
	P2-D2B	Lead	3,420
		Mercury	13
	P2-D3B	Arsenic	1,600
	P2-D7A	Lead	3,410
	P2-E4B	Lead	2,520
	P2-E6B	Lead	1,200
	P2-E7A	Lead	1,660
	P2-E7B	Lead	1,850
	P3-4	Lead	933
	P3-9	Lead	1,050
	P3-10	Lead	1420

State of New Jersey

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BOB MARTIN
Commissioner

September 27, 2012

Sin-Kie Tjho
USEPA, Region II – 22nd Floor
290 Broadway
New York, NY 10007-1866

Re: June 2011 Delaware River Remedial Investigation Report
DuPont Chambers Works
Route 130
Deepwater, NJ 08023
SRP PI # 008221

Dear Mr. Tjho:

The New Jersey Department of Environmental protection (Department) has completed review of the above referenced document dated June 2011, submitted pursuant to the Resource Conservation and Recovery Act (RCRA) Hazardous and Solid Waste Amendments (HSWA) Permit of 1994 and the Technical Requirements for Site Remediation at N.J.A. C. 7:6E. The following comments are offered for your consideration.

INTRODUCTION

The following comments are provided in accordance with Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments (EPA 540-R-97-006), NJDEP Technical Requirements for Site Remediation (N.J.A.C. 7:26E), NJDEP policy and other State and Federal guidance. The above referenced information was provided to NJDEP by URS on behalf of DuPont to document results of Phases I through III of the Delaware River Investigation adjacent to the DuPont Chambers Works site.

The investigations are intended to provide data necessary to satisfy the following objectives:

- Characterize the nature and extent of site-related constituents in sediment and surface water at historical process point-source outfalls and non-point source areas along the shoreline of the site.

- Collect data consistent with the Delaware River Basin Commission (DRBC) Delaware Estuary Benthic Inventory (DEBI) Program for comparison with ambient chemical and biological data collected throughout the estuary zones.

- Establish baseline sediment and surface-water data to direct and focus additional investigations in the Delaware River, as warranted.

To address areas with sediment contamination above benchmark concentrations, DuPont recommends deferring further ecological investigations until such time as hydraulic control of ground water at the site perimeter has been attained. At that undetermined time, DuPont proposes to evaluate changes in contaminant concentrations (COPECs) in sediment and overlying surface water. Then they will determine the need for further ecological investigations and the need for remedial actions to address ecological exposures and/or contaminant migration pathways between the site and the Delaware River.

COMMENTS

1. Deeper sediments (below 0-6") adjacent to the site (especially the NAPL area) may be impacted more than the surface layers due to subsurface discharge of dissolved contamination in ground water. These deeper sediments will need to be sampled at some point in the future following attainment of on-site hydraulic control of ground water. Pore water sampling will also likely be requested at that time. As mentioned in comments on the 2009 River Workplan, and as strongly suggested by data in this RIR, the B-aquifer subcrop zone beneath the river appears to be a significant discharge zone of contaminants from beneath the Chambers Works Facility (e.g., NAPL and/or dissolved contamination).

DEP also previously commented that since operations ceased in the Carney's Point area for the most part in 1978, deeper interval river sediment samples collected along the shoreline in this area would be desirable in that they might reveal or dispel the existence of historic contamination. This issue has not been addressed by DuPont to date. This request was also communicated to DuPont in the Phase II status meeting.

In general, once on-site hydraulic control is attained, the re-opened river investigation will need to fully delineate sediment contamination for all contaminants not fully investigated. Be advised, hydrodynamics in the river may have painted a completely different picture of sediment contaminant distribution by the time hydraulic control, (which will likely take years), is achieved. The list of analytical parameters should include, but not be limited to, PCBs and compounds analyzed for under current NJPDES discharge permit(s) (e.g., PFOA, daughter products, bi-products, breakdown products, etc).

2. Page 34 *Background Concentrations*

"Background sediment concentrations for metals" reported by the USACOE as part of the Delaware River Main Channel Deepening Project were used to help establish site-specific background for sediment locations adjacent to the site. These data, collected from the main

channel and not the river bank shallow areas, may not be appropriate for site-specific use. The RIR did not indicate whether these sediments were collected from shallow intervals or at depth, or if they were discrete or composites. Composites are commonly collected during dredging projects, but they are not used in ecological evaluations.

Additionally, in Section 6.2.1 Study Design, Section 6.3.1 Sediment, and Section 6.6.1, DuPont refers to the *Guidance for Sediment Quality Evaluatation* (NJDEP 1998). This document was replaced by the Ecological Evaluation Guidance (NJDEP 2012) in August 2011. All future documents should reference NJDEP 2012 (or most current version).

In Section 6.6.1 Sediment, DuPont refers to the ecological screening criteria (ESC) in NJDEP 1998. These ESC were supplemented **and updated in a table posted on NJDEP's Website in July 2008 and updated again in March 2009 located at** http://www.state.nj.us/dep/srp/guidance/ecoscreening/. **DuPont should use the ESC listed on NJDEP's ESC table, rather than the outdated 1998 document.**

Please contact this office is you have any questions.

Sincerely,

Linda Range

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